

REMARKS

Claims 1-18 and 22-28 are pending in the application. Claims 1-11 are withdrawn and claims 12-18 and 22-28 are rejected. Claims 1-11 have been canceled without prejudice.

Elections/Restrictions

In view of the finality of the restriction requirement, Applicants have canceled the withdrawn claims 1-11 without prejudice. However, Applicants still respectfully traverse the restriction requirement and reserve their right to petition this restriction. At the very least, irrespective of the differences between the claimed inventions, the Examiner has still not explained how simultaneous examination of all claims would be a burden, much less a serious burden (as is legally required), given the commonality of the subject matter of the withdrawn claims and elected claims, and given the Examiner's "coextensive" search in the classes covering all claim groups. The Examiner has not averred that a new search would be required for withdrawn claims 1-11.

Claim Rejections - 35 U.S.C. §103

The following obviousness rejections are asserted:

- (i) Claims 12-18 and 23-28 are rejected as being unpatentable over Brintzinger in view of Dubin for the reasons set forth on pages 2-5 of the Office Action.
- (ii) Claim 22 is rejected as being unpatentable over Brintzinger in view of Dubin and further in view of Jin.

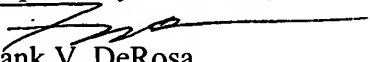
With respect to rejection (i) above, Applicants respectfully submit that at the very least, claims 12 and 23 are patentable and non-obvious over the combination of Brintzinger and Dubin. For example, the cited combination does not disclose or suggest a method for forming an interconnection structure *by forming a first solderable layer comprising Cu; forming a diffusion barrier layer comprising CoWP over the first solderable layer, and forming a second solderable layer of Ni over the diffusion barrier layer*, as essentially recited in claims 12 and 23. Brintzinger

teaches the use of an Ni layer (5) diffusion barrier formed on, and in direct contact with, a Cu interconnect (4) (see, e.g., FIG. 4, FIG. 6). This actually teaches away from the claimed inventions, as the claimed inventions utilize a barrier layer between Ni and Cu. Moreover, Dubin discloses in FIG. 4 a diffusion layer (425) of CoWP between a Cu layer (415) and a Sn layer (435), but does not specifically teach or suggest advantages of using a CoWP layer between Cu and Ni, as in the claimed inventions.

In other words, neither Brintzinger nor Dubin, alone or in combination, teach a diffusion barrier of CoWP between Cu and Ni solderable layers, as essentially claimed in claims 12 and 23. In this regard, it is respectfully submitted that the obviousness rejections are based not on the teachings of the references, but rather on the teachings in Applicants' specification as applied in view of the cited references. Therefore, the combination of Brintzinger and Dubin is seemingly deficient to establish a prima facie case of obviousness against claims 12 and 23 (as well as claims 13-15, 17, 22 and 24-28, at least by virtue of their dependence).

With respect to rejection (ii) above, in view of the deficiencies of Brintzinger and Dubin as applied to claims 12 and 23, the obviousness rejections are seemingly rendered deficient on their face. There is no suggestion in any of the references to use CoWP as a diffusion barrier interposed between Cu and Ni solderable layers of a solder bump interconnection structure. Accordingly, withdrawal of the obviousness rejections is respectfully requested.

Respectfully submitted,


Frank V. DeRosa
Reg. No. 43,584
Attorney for Applicant(s)

F. Chau & Associates, LLC
130 Woodbury Road
Woodbury, New York 11797
TEL.: (516) 692-8888
FAX: (516) 692-8889